

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group II in the reply filed on 5/21/2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

2. Figure 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 6-9 and 16-19 are rejected under 35 U.S.C. 102(b) as being anticipated by GB 1533163 (herein after GB '163).

With respect to claims 6 and 16, GB '163 teaches hydrocarbon material processing apparatus and method comprising:
a gasification furnace (Fig. 1, 3) for pyrolyzing and gasifying at least one of wastes, residual hydrocarbon heavy oil, and organic matter to produce a heat source gas (page 2, lines 110-117),
and a reforming furnace (1) for reforming a hydrocarbon material by using the heat source gas/(steam) produced in said gasification furnace (3) (as illustrated) (page 2, lines 101-107).

With respect to claims 7 and 17, GB '163 teaches wherein the apparatus comprises a reforming furnace (1). Intended use language does not add structural limitation to the claim language. Furthermore, it is inherent and well known in the art that reforming hydrocarbon and steam in a reforming furnace would produce hydrogen.

With respect to claims 8 and 18, GB '163 teaches wherein said gasification furnace (3) is configured to separately produce a first gas (6) by pyrolysis and gasification of the at least one of wastes, residual hydrocarbon heavy oil, and organic matter (page 2, lines 110-117) and a second gas/(steam (5)) by combustion of a residue of the pyrolysis
and gasification.

With respect to claims 9 and 19, GB '163 teaches wherein the second gas/(steam (5)) is used as the heat source gas for said reforming furnace (1) (as illustrated).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over GB 1533163 (herein after GB '163), as applied to claims 6 and 16 above, and further in view of Hertzberg et al. (US 2,832,666).

With respect to claims 10 and 20, GB '163 discloses all claim limitations as set forth above but fails to teach wherein the apparatus further comprises a heat exchanger for preheating air by the second gas; and a passage for supplying the preheated air to said reforming furnace. Hertzberg teaches an apparatus comprising a combustion chamber (Fig. 1, 29), a reactor (20) wherein a heat exchanger (26) preheats air by the second gas/(driver gas) (31/34) (as illustrated); furthermore, Hertzberg teaches preheating the reactant gases entering reforming furnace/(chemical reactor (20)) (col. 4, lines 58-62) in order to reduce the pressure ratio required for the process and thereby provide a more efficient process (col. 3, lines 60-75).

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide a heat exchanger for preheating air by the second gas (driver gas); and to provide a passage for supplying the preheated air to the reforming furnace in the apparatus disclosed in GB '163, as taught by Hertzberg, in order to reduce the pressure ratio required for the process and thereby provide a more efficient process.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAITLYN V. HANDAL whose telephone number is (571)272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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